## REMARKS/ARGUMENTS

Re-examination and favorable reconsideration in light of the above amendments and the following comments are respectfully requested.

Claims 1, 3 - 12, 14 - 19, 25, and 25 are pending in the application. Currently, all claims have been rejected.

By the present amendment, claims 3, 9, and 10 have been cancelled without prejudice and claims 6, 8, 11, 12, 15 and 16 have been amended.

In the office action mailed October 17, 2006, claims 1, 6, and 7 were rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 2,679,669 to Kempe; claims 8 and 9 were rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 3,142,875 to Lirones et al.; claims 3, 8, 10, 14, 15, and 17 were rejected under 35 U.S.C. 103(a) as being unpatentable over Kempe in view of U.S. Patent No. 3,383,235 to Blackburn et al.; claim 4 was rejected under 35 U.S.C. 103(a) as being unpatentable over Kempe in view of U.S. Patent No. 2,870,527 to Yntema et al.; claims 5, 18, and 25 were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,287,932 to Schneider in view of U.S. Patent No. 4,579,752 to Dubois et al.; claims 11 and 16 were rejected under 35 U.S.C. 103(a) as being unpatentable over Kempe in view of U.S. Patent No. 4,293,619 to Landingham et al.; claim 12 was rejected under 35 U.S.C. 103(a) as being unpatentable over Kempe in view of U.S. Patent No. 3,177,094 to Dijksterhuis et al.; claim 19 was rejected under 35 U.S.C. 103(a) as being unpatentable over Schneider in view of Kempe; claim 24 was rejected under 35 U.S.C. 103(a) as being unpatentable over Kempe in view of Dubois et al. and further in view of U.S. Patent No. 5,472,795 to Atita.

The foregoing rejections are respectfully traversed with respect to the instant response.

In order to find that a reference anticipates a claim, each and every one of the claimed features must be expressly or inherently present in the single reference. Claim 1 is allowable because Kempe does not contain every feature of the claim. Claim 1 clearly calls for coating to consist of aluminum silicate. Kempe does not disclose such a coating. The coating in Kempe is calcium aluminum silicate. The Examiner's position would have been correct if Applicants said the coating consisted of an aluminum silicate. However, Applicants did not use the word "an" before "aluminum silicate" and thus, the Examiner's finding of anticipation is in error.

Claim 6 is also no anticipated by Kempe. Claim 6 says that the core is formed from a material selected from the group consisting of tantalum, niobium, tungsten, alloys thereof, and intermetallic compounds thereof. The core is Kempe is molybdenum.

Claim 7 is allowable for the same reasons as claim 1.

With respect to the rejection of claim 8 on anticipation grounds over Lirones et al., there is no disclosure in this reference of the coating consisting of an oxide selected from the group consisting of calcia, magnesia, alumina, zirconia, chromia, yttria, and hafnia. The coatings in Lirones et al. are metals such as chromium, platinum, tungsten, columbium, tantalum, and alloys thereof. There is no disclosure of any of these metals being present as a coating in oxide form.

With respect to the rejection of claims 8, 14, 15, and 17, on obviousness grounds over Kempe in view of Blackburn et al., Applicants have the following comments. Claim 8 has been amended to delete any reference to silica. Since neither Kempe nor Blackburn disclose the use of calcia, magnesia, alumina, zirconia, chromia, yttria, and hafnia as coating materials, claim 8 is allowable over this combination of references.

Claim 14 is directed to a casting system which includes a refractory metal core, a ceramic coating, and a layer between the refractory metal core and the ceramic coating. The layer comprises a metal selected from the group consisting of nickel, platinum, chromium, silicon, and alloys thereof. Kempe's coating is aluminum silicate. Blackburn does not teach or suggest placing a layer of one of the claimed metals between the molybdenum core and the ceramic coating. Thus, neither of the cited and applied references teaches or suggests the claimed invention.

Claim 15 is directed to a casting system wherein an intermediate layer between a refractory metal core and a ceramic coating is NiAl. Neither reference teaches or suggests such a coating.

Claim 17 is allowable for the same reason that claim 14 is allowable as well as on its own accord.

With respect to the rejection of claim 4 on obviousness grounds, neither reference teaches or suggests a coating consisting of zirconium silicate. The secondary reference to Yntema et al. discusses the coating as being a silicon zirconium intermetallic. However, this reference never says that the intermetallic is zirconium silicate. An obviousness rejection may not be based upon conjecture or speculation. Thus, the obviousness rejection based upon the combination of references fails because neither reference teaches or suggests the claimed coating.

With respect to the rejection of claims 5, 18, and 25 over the combination of Schneider in view of Dubois et al., this rejection also fails. Schneider is directed to a metal core coated with a ceramic protective layer which is preferably aluminum oxide. Claim 18 calls for the refractory metal core to have an etched surface. Schneider lacks the etched surface. The Dubois patent is cited as teaching the use of an etching agent. A review of Dubois shows that it is not directed to casting systems. A review also shows that this patent is directed to a process where the metal reacts to form an intermetallic compound which is subsequently oxidized and/or a surface oxide reacts directly to form a silicon containing region. In the cited portion relied upon by the Examiner, it is clearly stated that a silicon-containing region is formed on the surfaces of metals through the interaction of the metal surface with silanes. It is not understood where exactly it is taught by Dubois et al. to form an etched surface and then coat the etched surfaced with alumina. If anything, Dubois et al. teaches away from the claimed invention since it teaches the formation of a silicon-containing region. Thus, one of ordinary skill in the art would not be motivated to combine the references in the manner suggested by the Examiner. Even if one did combine the references, one would not reach the claimed invention. For these reasons, claim 18 is allowable.

With respect to claim 25, it should be noted that molybdenum is not one of the refractory metal core materials. Thus, the Schneider patent has no relevance to the claimed invention. As for Dubois et al., it does not relate to a casting system having a refractory metal core with an oxidation resistant and protection means being a coating comprising at least one oxide and/or a silicon containing material. Thus, even if one of ordinary skill in the art were somehow motivated to combine the references, one would not reach the claimed invention because neither of the references teaches or suggests the claimed invention.

Claim 5 is allowable for the same reasons as claim 25 as well as on its own accord.

With respect to the rejection of claims 11 and 16 over the combination of Kempe and Landingham et al., these rejections fail as well. With regard to claim 11, Kempe lacks the claimed nitride coating. Landingham et al. teaches the formation of a composite which includes a ceramic portion of silicon nitride, a refractory metal portion, and a layer of molybdenum silicide between the silicon nitride and the refractory metal portion. Landingham et al's composite is used for the fabrication of parts for a helical expander for use in power generation. It has nothing at all to do with casting systems. Thus, the Landingham et al. patent is non-analogous art. For this reason alone, one of ordinary skill in the art would not be inclined to combine the references in the manner suggested by the Examiner. Even if the references were combinable, they would not teach or suggest the claimed invention since the nitride coating in Landingham et al. does not contact the refractory metal core. This is because of the intermediate layer of molybdenum disilicide.

With regard to claim 16, neither of the cited and applied references teaches or suggests a casting system which includes a refractory metal core, a ceramic coating, and an intermediate layer formed from a material selected from the group consisting of TiC, TiN, and $Si_3N_4$. Landingham et al.'s silicon nitride layer is an outer ceramic layer, not an intermediate layer between a refractory metal core and a ceramic coating. Thus, Landingham et al., even if combinable with Kempe, does not teach or suggest the claimed invention.

With regard to the rejection of claim 12 over the combination of Kempe and Dijksterhuis et al., claim 12 calls for a carbide coating to be located adjacent a refractory metal core. Kempe clearly lacks such a coating. As for Dijksterhuis et al., this reference does not cure this deficiency in Kempe. Dijksterhuis et al. teaches one how to form a carbon-coated molybdenum wire which has a molybdenum core, a layer of molybdenum disilicide adjacent the core, a layer of silicon adjacent the silicon layer, a layer of silicon carbide adjacent the silicon layer, and an outer layer of carbon. One of ordinary skill in the art would not combine the two references because the secondary reference has nothing to do with a casting system and is from non-analogous art. Even if one would somehow be motivated to combine the references, one would not arrive at a structure where the carbide coating is located adjacent the core. Dijksterhuis et al. does not teach one of ordinary skill in the art how to form such a construction.

Claim 19 is allowable over the combination of Schneider and Kempe for the following reasons. As noted by the Examiner, Schneider fails to teach the use of a top coat of aluminide. The Examiner argues that it would be obvious to modify Schneider by Kempe because Kempe teaches the use of an aluminide. The argument however is wrong because Kempe does not teach the use of an aluminide. Calcia aluminum silicate is not an aluminide. An aluminide is a compound where the aluminum is combined with a more electropositive element. Calcia aluminum silicate is not such a compound. Thus, even when combined, the references fail to teach or suggest the claimed subject matter.

Claim 24 is allowable over the combination of Kempe in view of Dubois et al. and Atita for the following reasons. Kempe lacks the etched surface and a coating comprising alternating layers of alumina and a material selected from the group consisting of TiCN and zirconia. As discussed above, Dubois et al. has nothing to do with a casting system and there is no disclosure of an etched surface. Atita also has nothing to do with a casting system. Atita shows a composite structure having layers of zirconia and alumina or silicon carbide. The support 11 in Atita is not a refractory metal core material. It is submitted that one of ordinary skill in the art would not be motivated to combine the secondary references with

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Kempe because they are non-analogous art and that even if they did, they would not arrive at the claimed invention.

For the foregoing reasons, the instant application is believed to be in condition for allowance. Such allowance is respectfully solicited.

Should the Examiner believe an additional amendment is needed to place the case in condition for allowance, the Examiner is hereby invited to contact Applicants' attorney at the telephone number listed below.

No fee is believed to be due as a result of this response. Should the Director determine that an additional fee is due, he is hereby authorized to charge said fee to Deposit Account No. 21-0279.

Respectfully submitted,

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I, Karen M. Gill, hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: "Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313" on **January 17, 2007**.